

WE CLAIM:

1. An optical data recording medium, comprising:
a light transmittable plastic substrate; and
a recording layer formed on said plastic
substrate and containing a hydrogenated amorphous
material that is selected from a group consisting of
hydrogenated amorphous carbon, hydrogenated amorphous
amorphous silicon carbide, hydrogenated amorphous
boron carbide, hydrogenated amorphous boron nitride,
hydrogenated amorphous silicon, and hydrogenated
amorphous germanium.
- 10 2. The optical data recording medium of Claim 1,
wherein said recording layer has a hardness greater
than that of said plastic substrate.
- 15 3. The optical data recording medium of Claim 1,
wherein said hydrogenated amorphous material
decomposes and releases hydrogen at a temperature
greater than 300°C, whereas said plastic substrate is
softened at a temperature in a range of from 80°C to 300
20 °C so as to permit formation of recesses in said plastic
substrate as a result of the hydrogen released by said
hydrogenated amorphous material.
- 25 4. The optical data recording medium of Claim 1,
wherein said hydrogenated amorphous material
contains 5 to 60 atomic percent hydrogen.
5. The optical data recording medium of Claim 1,
wherein said hydrogenated amorphous material is

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hydrogenated amorphous carbon.

6. The optical data recording medium of Claim 1,
wherein said recording layer has a thickness in a
range of from about 30 nm to 2500 nm.

5 7. The optical data recording medium of Claim 1,
wherein said plastic substrate is made from a resin
material selected from a group consisting of acrylic
resins, polycarbonate resins, epoxy resins, and
polyolefin resins.

10 8. The optical data recording medium of Claim 1,
wherein said recording layer is formed on said plastic
substrate via plasma assisted chemical vapor
deposition techniques by decomposition of a
hydrocarbon with a pressure of 20 to 400 milli-torr
15 and a substrate bias voltage in a range of from 250
to 550 volts.

9. The optical data recording medium of Claim 1,
further comprising a reflective layer formed on said
recording layer such that said optical data recording
20 medium has a reflectivity greater than 40% in response
to a wavelength of from 300 to 900 nm.

10. An optical data recording medium, comprising:
a light transmittable plastic substrate; and
a recording layer formed on said plastic
25 substrate and made from hydrogenated amorphous carbon
which contains 5 to 60 atomic percent hydrogen and
which decomposes and releases hydrogen at a

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temperature greater than 300 °C, said plastic substrate being softened at a temperature in a range of from 80°C to 300°C so as to permit formation of recesses in said plastic substrate as a result of the hydrogen released by said hydrogenated amorphous carbon.

11. The optical data recording medium of Claim 10,
further comprising a reflective layer formed on said
recording layer such that said optical data recording
medium has a reflectivity greater than 40% in response
10 to a wavelength of from 300 to 900 nm.

12. The optical data recording medium of Claim 10,
wherein said plastic substrate is made from a resin
material selected from a group consisting of acrylic
15 resins, polycarbonate resins, epoxy resins, and
polyolefin resins.

13. The optical data recording medium of Claim 10,
wherein said recording layer is formed on said plastic
substrate via plasma assisted chemical vapor
deposition techniques by decomposition of a
hydrocarbon with a pressure of 20 to 400 milli-torrs
and a substrate bias voltage in a range of from 250
to 550 volts.

14. The optical data recording medium of Claim 13,
25 wherein said plastic substrate is held at a temperature
of about room temperature during the formation of said
recording layer.